



Australian Bureau of Statistics

CensusAtSchool Australia

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Resources



CaSMa04 - Could the footprint belong to the person in the image?

You can download this activity, the teacher solutions and the [assessment rubric](#) as a rich text file (RTF) at the bottom of the page. Download our printer friendly Prepared Samples as Excel files or access data using the Random Sampler.

Subject Area

Mathematics

Key Statistical Literacy Competencies Addressed

- Data awareness
- The ability to understand statistical concepts
- The ability to analyse, interpret and evaluate statistical information
- Communicating statistical information and understandings

Overview

In this classroom activity you are to prepare a report for Belinda, the manager of a forensic science unit. Your report may be used as evidence by those investigating the crime so it must be clear and easy to understand. A part image of a person from a security camera and a footprint are the two key pieces of evidence from the crime scene. Are they from the same person?

Requirements

- Computer with internet connection

- Spreadsheet software
- Calculator
- Pens and paper
- Student Worksheet
- Image

Instructions

Instructions:

You, Dan and Lucy work in a forensic science unit lead by Belinda. The unit is asked to investigate whether a footprint, found at a crime scene, belongs to the person whose partial image is captured by a security camera at the scene.

The footprint was measured to be 24cm in length.

These pieces of evidence are all that the team has to work on.



Task One: Dan's first thoughts

Dan suggests that if they can determine the real-life length of something on the image from the security camera they may be able to make some progress.

After some investigation Dan identifies the brand and style of the board shorts being worn by the person. He also finds that they are made as a "one size fits all" with a length of 56 cm. Could this be used to find the real-life belly button height?

1. With a partner, list as many ways as you can to find the real-life belly button height of the person in the image.
2. Choose one way and use it to find the real-life belly button height of the person in the image. Include any rules, tables or graphs you used.

Task Two: Lucy poses a question

Is it possible to estimate the height of a person from their 'belly button' height?

Height and belly button height are measured in the CensusAtSchool questionnaire. This data could be used to investigate Lucy's question.

3. Brainstorm ideas of how you can investigate Lucy's question using the CensusAtSchool data.

4. Choose one way and use it to estimate the height of the person in the image. Don't forget to include any rules, tables or graphs you used.

You can use the random sample in the Excel spreadsheet attachment at the bottom of the page or you can go to the CensusAtSchool website and use the Random Sampler to obtain a sample.

Reference year *Select Year*
Select questions All
Sample size 200

Task Three: Another thought

Can the sample be used to estimate the height of a person from the length of their foot? If you can, is it the same as the height from the belly button estimation?

5. Brainstorm ideas of how you could investigate if it is possible to estimate the height of a person from the length of their foot.

6. Choose one way and use it to estimate the height of the person who left the footprint. Don't forget to include any rules, tables or graphs you used.

Task Four: Could the footprint belong to the person in the image?

7. From your investigations, prepare a report to the manager of the forensic science unit. You will need to clearly state your conclusion about the question "Could the foot print belong to the person in the image?" You must provide evidence to support your conclusion.

Extension

The Vitruvian Man and Golden Ratio

There are many relationships in nature similar to the one above. Arm span and height is another relationship that can be investigated using CensusAtSchool data.

The Vitruvian Man is one example that intrigues students of all ages. Who is he? Who made him? When? How is he connected to your earlier work?

Similarly, the golden ratio occurs in a wealth of situations natural and man made.

This topic is investigated in greater depth in CaSMa12: The Golden Ratio.

Student Worksheet

RTF

Image



Teacher Solutions

RTF

Assessment Rubric

RTF

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